

Docket No. F-8098

Ser. No. 10/751,378

**AMENDMENTS TO THE SPECIFICATION:**

**Please amend the first full paragraph on page 3 as follows:**

To solve the above problems, the first invention is for an EGR gas cooling mechanism comprising: a heat exchanger coupled to an introducing route and a delivery route for a cooling medium liquid for cooling EGR gas, the heat exchanger comprising: a body pipe having an inlet for the EGR gas located at one end and an outlet for the EGR gas located at the other end; a flowing route for EGR gas provided inside the body pipe, wherein a thermal medium fluid having a high boiling point of 150 degrees Celsius or higher is supplied as the cooling medium liquid to the heat exchanger to prevent soot and condensed liquid from being attached to an inner surface of the flowing route of the EGR gas by heating operation for the inner surface of the flowing route of the EGR, and there is provided, in the flowing route for supplying the thermal medium fluid having a high boiling point, a controller for controlling the supplying amount of the cooling medium liquid using an ECU for controlling an internal combustion engine, wherein the amount of cooling medium liquid supplied to the heat exchanger can be adjusted by the ECU accessing the controller based on measured temperatures from a heat conduction pipe temperature sensor for measuring the inner surface temperature of the heat conduction pipe disposed in the apparatus, an EGR gas temperature sensor for measuring the outlet temperature of the EGR gas, and a cooling medium temperature sensor for measuring the outlet temperature of the cooling medium liquid.

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**Please amend the third full paragraph on page 3 as follows:**

The controller may be constituted of a circulation pump disposed at the introduction route for the cooling medium liquid and a control valve, and a supplying amount of the cooling medium liquid supplied to the heat exchanger may be controlled by either or both of increasing and decreasing operation for flowing amount of the circulation pump and opening and closing operation of the control valve. The controller may control the supplying amount of the cooling medium liquid to the heat exchanger according to any of temperature or temperatures at the surface of the flowing route of the EGR, the outlet of the cooling medium liquid, and the outlet of the EGR gas. Moreover, the heating operation for the inner surface of the flowing route of the EGR gas may be made in a range between 120 degrees Celsius and 150 degrees Celsius. The heat conduction pipe may be directly coupled to at least one of the body pipes.

**Please amend the last full paragraph on page 4 as follows:**

~~In the second invention, with~~ With the EGR gas cooling mechanism, the EGR gas burned in the combustion chamber is flown from an exhaust manifold into a flowing route via an inlet of a body pipe. In a meantime, a cooling medium liquid made of a high-boiling point cooling medium liquid having a boiling temperature of 150 degrees Celsius or higher is continuously fed via an introduction route according to control from the controller to a heat exchanger provided at the exterior of the

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flowing route, and is delivered to a delivery route after flown along the outer peripheral surface of the flowing route. Heat exchange is performed, within the heat exchanger through which the cooling medium liquid is normally circulated, between the cooling medium liquid made of the high-boiling point cooling medium liquid having a boiling temperature of 150 degrees Celsius or higher and the EGR gas via the inner and outer surfaces of the flowing route whose inner surface is heated, and the adequately cooled EGR gas is returned to an intake manifold side via the outlet.